

Graphing and Properties of Hyperbolas

Date_____ Period_____

Identify the vertices, foci, and direction of opening of each.

1) $\frac{x^2}{81} - \frac{y^2}{4} = 1$

2) $\frac{x^2}{121} - \frac{y^2}{81} = 1$

3) $\frac{y^2}{25} - \frac{x^2}{16} = 1$

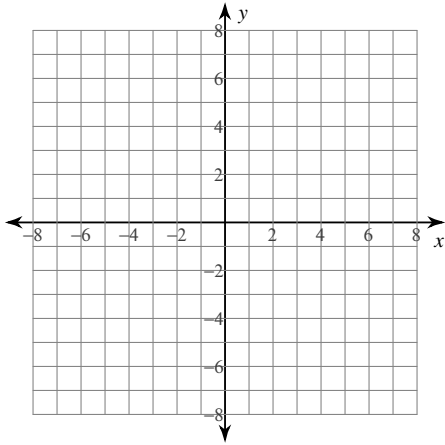
4) $\frac{x^2}{121} - \frac{y^2}{36} = 1$

5) $\frac{(x+2)^2}{169} - \frac{(y+8)^2}{4} = 1$

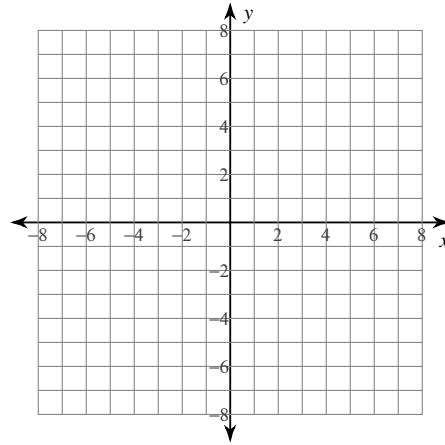
6) $\frac{(y+8)^2}{36} - \frac{(x+2)^2}{25} = 1$

Identify the vertices and foci of each. Then sketch the graph.

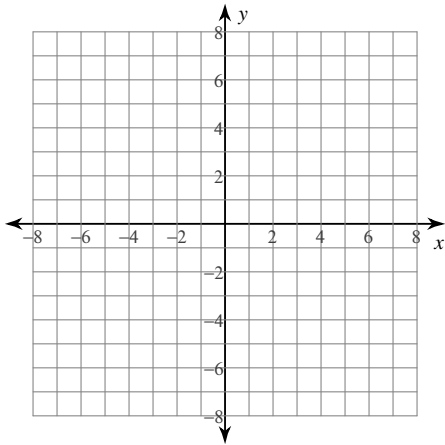
$$7) \frac{x^2}{20} - \frac{(y+1)^2}{10} = 1$$



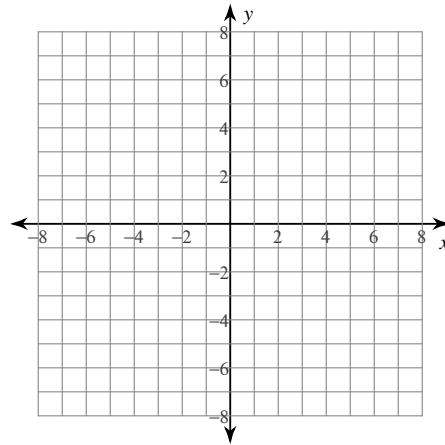
$$8) \frac{(x-3)^2}{4} - \frac{(y+1)^2}{9} = 1$$



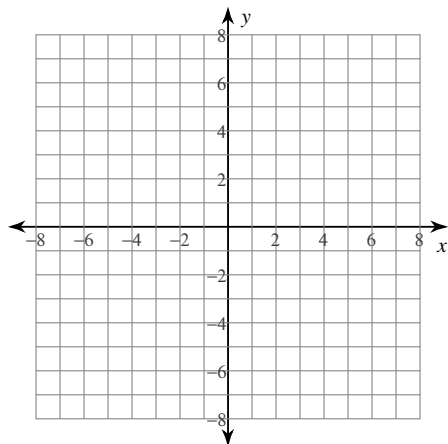
$$9) \frac{(y-1)^2}{9} - \frac{(x+1)^2}{16} = 1$$



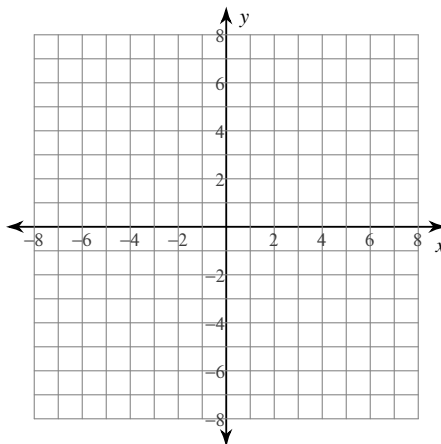
$$10) \frac{y^2}{9} - \frac{(x-2)^2}{9} = 1$$



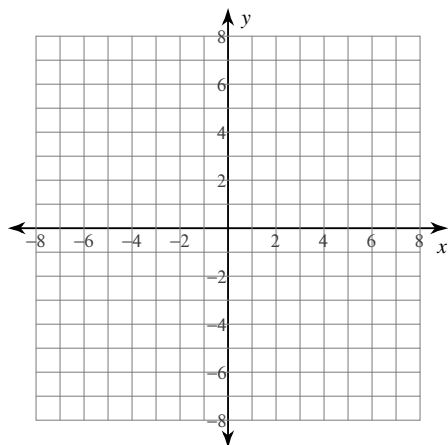
$$11) \frac{y^2}{25} - \frac{x^2}{25} = 1$$



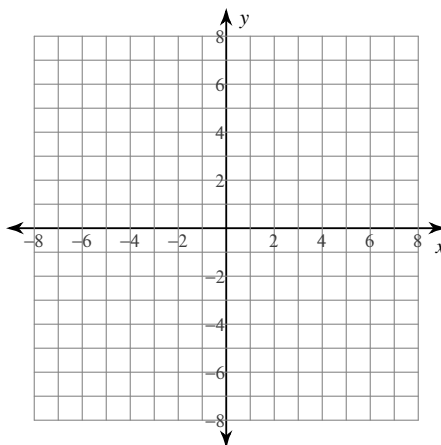
$$12) \frac{x^2}{25} - \frac{(y-2)^2}{4} = 1$$



$$13) \frac{(x-1)^2}{4} - \frac{(y-3)^2}{4} = 1$$



$$14) \frac{y^2}{9} - \frac{x^2}{25} = 1$$



Identify the asymptotes, length of the transverse axis, length of the conjugate axis, length of the latus rectum, and eccentricity of each.

$$15) -10y - y^2 = -4x^2 - 72x - 199$$

$$16) -y^2 + 12y - 19 = 18x - x^2$$